

Living Soil – a New Look

By Michael Petersen, NRCS agronomist

Are you aware that not all soil appears the same as you hold up a handful? Soil scientists who examine soils such as the researchers at Akron, Colorado's Central Plains Experimental Station work to improve the quality and productivity of soils. A giant in the field of soils researching in the Prairie region of Canada's western province Alberta is looking at the soil rhizosphere (the immediate zone where roots live) from the microscopic citters point of view. Dr. Jill Clapperton a soil scientist, brings renewed enthusiasm that soil is alive and how all of us should take care of it.



Dr. Jill Clapperton

Jill is the Rhizosphere Ecologist at the Agriculture and Agri-Food Canada Lethbridge Research Centre. She is an internationally respected lecturer presenting research findings and promoting an understanding of how soil biology and ecology interact with cropping and soil management systems to facilitate long-term soil quality and productivity. Her area of research studies soil food webs, nutrient cycling, soil fauna-plant disease interactions, rhizosphere interactions, and soil biodiversity. The Rhizosphere Ecology Research Group studies rangelands, and cropping systems under low-input and organic management systems emphasizing reduced and no tillage. Jill has a keen interest in promoting science in schools and participates with other researchers and educators to develop soil ecology educational programs. The Worm Watch program

(www.wormwatch.ca) she founded has recently been cited by the National Science Teachers Association for excellence in science education.

Mycorrhizal Fungi – A web of good fortune

Jill illustrates in her many lectures and field demonstrations the importance of soil fungi and the great benefit they are to 95% of all land plants. Vesicular arbuscular mycorrhizal fungi, VAM for short, appear to be essential to the establishment, growth and survival of plants we grow in eastern Colorado; corn, grain sorghum, soybeans, wheat, and millet. VAM fungi are known to increase drought resistance, root disease attacks, and assist in the uptake of phosphorus, calcium, zinc, and even some organic nitrogen forms.

Jill's studies show that once plant roots are colonized by VAM, their physiology and biochemistry change. These plants then have higher rates of photosynthesis, better water use efficiencies, move more carbon compounds to the roots, and help soils stick together. Consequently, the soils rhizosphere becomes a healthier and a more productive environment for roots to grow, absorb, and respire.

Jill states this all happens by using conservation tillage practices; returning crop residues to a natural condition of slow breakdown, dissolving into the soil, feeding the worms, microbes, fungi, centipedes and other minute critters. This process energizes the soil ecology to become vibrant and alive. Her research and strong efforts to educate people all across North America is one of her hallmarks and great achievements for agriculture. Knowledge of the unseen part of soil drives Jill and those of us in the field of Soil Quality to translate new research findings into the practical world of raising crops.

To read more on her work and thoughts, read her work on the Web page noted above (Wormwatch) or jump on the Internet and read www.sdnottill.com/Newsletters/Real%20Dirt.pdf.